SURVEY REPORT

1.0 GENERAL

Project Title: Monitoring and Management of the Fort Pierce ODMDS
Survey Title: Fort Pierce ODMDS Sidescan Sonar Survey
Anderson Requested By: Christopher McArthur *Organization*: U.S. EPA Region 4

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2.0 SCHEDULE OF OPERATIONS

Mobilization Date: 7/9/99 *Location*: Fort Pierce, Florida
Departure Date: 7/9/99 *Survey Duration* (Days): 2.5
Weather/Breakdown Days: 0
Demobilization Date: 7/12/99 *Location*: Fort Pierce, Florida
Comments:

3.0 BACKGROUND INFORMATION

The Fort Pierce ODMDS received final designation and was moved one half mile to the south of the interim site in 1993 to avoid live bottom habitat discovered near the northern boundaries of the interim ODMDS. As part of the site designation, a Site Management and Monitoring Plan (SMMP) was developed. The SMMP identified potential transport of fine grained material offsite as the major concern to be addressed by monitoring. During the summer of 1995 approximately 724,000 cubic yards of dredged material from the Fort Pierce Harbor Navigation was disposed at the Fort Pierce ODMDS. Subsequent to this project, Region 4 conducted sediment mapping of the ODMDS to determine stability of the disposal mound. Results indicated a stable mound with a winnowing of surface fines over time. However, this technology is expensive (each survey consuming almost 50% of the Region's annual budget) and less expensive methods of tracking disposed material is desired. During a training

exercise utilizing the OSV Anderson's sidescan system at the Fort Pierce ODMDS, patches of fine grained material was identified. Region 4 staff decided to examine the entire site and surrounding areas to determine if the fine grained areas are associated only with the ODMDS and whether sidescan sonar can be used at the Fort Pierce ODMDS in replacement of the more expensive sediment mapping technology.

4.0 SUMMARY OF SCIENTIFIC ACTIVITIES/OBSERVATIONS (Attach detail if needed)

Fifty transects were completed during the survey. Odd numbered transects were completed followed by even numbered transects. Transects were 2nmi in length. Six of the odd numbered transects were extended an additional 1.5 nautical miles to the north and four of the even numbered transects were extended 0.5 nautical miles to the south. The initial 14 odd transects encountered retriggering problems with EOSCAN resulting in frequent premature termination of the program and multiple files for each transect with small data gaps. This problem was overcome after the 14th transect. Time allowed for the rerunning of 12 of the 14 transects.

Eight stations were selected for ground truthing by divers on 7/14 and 7/15. They are described in Table 1.

5.0 SUMMARY OF RESULTS COMPLETED DURING SURVEY (Attach detail if needed)

The Fort Pierce ODMDS and a 1 nmi buffer on each side were surveyed. In addition, areas further to the north and south were surveyed. Preliminary results indicate that the disposal area has associated with it areas of fine grained sediments indicated by acoustic signal low return. These patches of low return were not seen far from the ODMDS and are likely associated with dredged material disposal. Samples from the areas of low return and the areas of stronger return nearby were collected for grain size analysis.

Table 1: Diver Ground Truthed Stations

Station	Latitude	Longitude	Sonar Description	Visual Description
14	27°27.47'	80°11.92'	Area of low to no return	Coarse shell hash bottom
15	27°27.47'	80°11.92'	Area of harder return and sand waves near low return area.	Coarse shell hash bottom
A	27°27.25'	80°12.35'	Scattered hard returns surrounded by soft bottom (fig.1)	Large (4' high by 6' long) limestone rubble sitting on bottom. Did not look natural. Likely disposal event. Numerous fish.
B	27°27.23'	80°13.05'	Long line (400m) transition from strong to weak return	Uniform bottom consisting of shell hash.
C	27°26.98'	80°11.98'	Long target (13m) with minimal shadow aligned N/S	No object found
D	27°26.40'	80°11.98'	Long narrow patch of soft return	Uniform bottom consisting of shell hash
E	27°26.79'	80°12.11'	Small returns in area of coarse bottom with sand waves surrounded by patches of low return areas south of ODMDS boundaries	No targets found. Area of coarse sediments and fine sediments found and sampled for visual observation.
F	27°27.42'	80°11.90'	Numerous strong returns with shadows	Low relief (1ft) rubble as large as 7ftx7ft

6.0 LIST, COMPLETION DATES, AND DISCUSSION OF PENDING ANALYSES

The pending analysis and completion dates for this survey are listed in Table 2.

Table 2: Completion Dates

Task	Date	Organization
Grab Sample Analysis	12/1/99	EPA R4 - SESD
Sidescan Mosaic	12/1/99	EPA R4 - WMD
Bathymetric Analysis	12/1/99	EPA R4 - WMD
Fort Pierce ODMDS SMMP Monitoring Report	6/1/00	EPA R4 - WMD

EPA Region 4 or a contractor will produce a mosaic of the sidescan record. EPA Region 4 will analyze the bathymetric data. A comparison to the 1998 bathymetry will be made.

7.0 PROBLEMS ENCOUNTERED

Retriggering problems were encountered with the EOSCAN software resulting in frequent (6 per transect) premature program termination and loss of record. However, approximately 25% of the way into the survey this problem was remedied through modifications in the software configuration. Most of the transects where this problem was encountered were re-run at the end of the survey.

8.0 ACHIEVEMENT OF SURVEY OBJECTIVES

All fifty transects were completed. Eight stations were diver ground truthed. Two stations were sampled for grain size analysis.

9.0 PRELIMINARY ENVIRONMENTAL MANAGEMENT DECISIONS FROM SURVEY

The major environmental question is whether the disposal mound remains contained within the Fort Pierce ODMDS and whether the disposed material can be detected utilizing sidescan sonar. Preliminary results indicate that sidescan can detect the fine

grained disposed dredged material. The dredged material is sufficiently different from ambient sediments to be detected utilizing sidescan sonar. The sidescan record also indicates that the dredged material appears to remain predominately within the ODMDS 4 years after disposal. Based on the preliminary results, the site is a suitable location for disposal of fine grained dredged material.

Additionally, no significant hard bottom resources were detected in the southern portions of the ODMDS.

10.0 RECOMMENDATIONS FOR ANDERSON IMPROVEMENTS

None

11.0 CONTRACTOR SUPPORT EVALUATION

No contractor support was used on this survey.

12.0 SCIENTIFIC PARTY (If different from survey plan)

Name	Survey Responsibility	Organization
Christopher McArthur	Chief Scientist	EPA R4 - WMD
Drew Kendall	Watch Chief	EPA R4 - WMD
Steve Blackburn	Watch Chief	EPA R4 - WMD

13.0 FINAL REPORTING PLANS

Final Report/Other Document Description	Completion Dates
Fort Pierce ODMDS SMMP Monitoring Report	January 1, 2001

Report Filing Location: EPA Region 4, Atlanta, GA